

1 CLAIMS

2 I/We claim:

- 3 1. A compliant system of at least two workholders for use with a machine having a table  
4 which supports a workpiece, each of said workholders comprising:
  - 5 (a) a frame adapted to attach to the machine table;
  - 6 (b) at least one guide rod slidably attached to said frame, having proximal and distal  
7 ends;
  - 8 (c) a head attached to said distal end of said guide rod;
  - 9 (d) means for extending said head against the workpiece with substantially constant  
10 pressure; and
  - 11 (e) means for retracting said head;  
12 each of said means for extending and means for retracting being responsive to input  
13 from an operator.
- 14 2. The compliant workholder system of claim 1 wherein each of said workholders further  
15 comprises timing means, regulating said extending and retracting means, whereby each  
16 of said heads remains retracted for a controllable time period after said operator input.
- 17 3. The compliant workholder system of claim 2 wherein said timing means are controllable  
18 such that said time period is individually adjustable for each of said workholders.
- 19 4. The compliant workholder system of claim 3 wherein either of said workholders can be  
20 made to extend before the other.
- 21 5. A compliant system of at least two workholders for use with a machine having a table  
22 which supports a workpiece, each of said workholders comprising:
  - 23 (a) a frame adapted to attach to the machine table;
  - 24 (b) at least one guide rod slidably attached to said frame, having proximal and distal  
25 ends;

- 1 (c) a head attached to said distal end of said guide rod;
- 2 (d) an extension mechanism to urge said head outward against the workpiece with
- 3 substantially constant pressure when activated;
- 4 (e) a retraction mechanism, to retract said head inward proximate said frame, when
- 5 activated; and
- 6 (f) a control device, responsive to an operator input by activating said retracting
- 7 mechanism, and activating said extension mechanism in the absence of said user
- 8 input.
- 9 6. The compliant workholder system of claim 5 wherein said retraction mechanism and said
- 10 extension mechanism comprise a double acting fluid power cylinder.
- 11 7. The compliant workholder system of claim 5 wherein each of said control device
- 12 comprises a time delay device which causes said retraction mechanism to remain
- 13 activated for a certain delay period after said operator input terminates and delays
- 14 activation of said extension mechanism for the same said delay period.
- 15 8. The compliant workholder system of claim 7 wherein each of said control devices is
- 16 responsive to the same, single, operator input and each of said delay periods can be
- 17 separately varied by the operator.
- 18 9. A system of at least two compliant workholders for use with a machine having a table
- 19 and a workpiece guide, each of said workholders comprising:
- 20 (a) a frame adapted to attach to the machine table;
- 21 (b) at least one guide rod, having proximal and distal ends, slideably attached to said
- 22 frame;
- 23 (c) a head attached to the distal end of said guide rod;

1 (d) a double acting pneumatic piston, mounted to said frame and acting on said head to  
2 cause it to extend outward toward the workpiece guide and retract inward proximate  
3 said frame; and

4 (e) a control valve, regulating air flow to said pneumatic piston whereby said piston  
5 retracts when said valve is activated and extends when said valve is inactive;  
6 said system further comprising at least one momentary switch coupled to each of said  
7 control valves whereby said valve is activated when said switch is pressed; and an air  
8 coupling, adapted to be connected to an external air source and providing the air to each  
9 of said pistons and said control valves.

10 10. The compliant workholder system of claim 9 wherein each of said workholders further  
11 comprises an adjustable time delay device coupled to said control valve which causes  
12 said valve to remain activated for a certain delay period after said momentary switch is  
13 released.

14 11. The compliant workholder system claim 10 wherein said delay periods can be varied by  
15 the operator.

16 12. The compliant workholder system of claim 10 further comprising an intermediate valve,  
17 operated by said momentary switch and coupling a first of said control valves to said  
18 time delay device, said intermediate valve operating in the same manner but at a higher  
19 pressure than the second of said control valves whereby said first control valve can be  
20 caused to be connected to said time delay device prior to said second control valve  
21 being connected to its time delay device.